**Final Review Packet\_CT** Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Semester 2 Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Pr \_\_\_\_

**Triangle Congruence Theorems**

Draw an example of each triangle congruency. The first one has been done for you.

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| 1) Two triangles congruent by SSS.  http://04.edu-cdn.com/files/static/learningexpressllc/9781576857458/CONGRUENT_TRIANGLES_13.GIF | 2) Two triangles congruent by SAS. |
| 3) Two triangles congruent by AAS. | 4) Two triangles congruent by ASA. |
| 5) Two triangles are congruent by HL. | 6) Which of the following is NOT a triangle congruence theorem?   1. SSA 2. AAS 3. SSA 4. ASA |
| Quick example proof! **READ CAREFULLY TO RE-TEACH YOURSELF STEPS.**  **Given**  **Prove** ∆*MKL* ≅∆*TVL*   |  |  | | --- | --- | | **Statement** | **Reason** | | 1) | 1) Given | | 2) KL LV | 2) Given within figure | | 3) | 3) Vertical angles | | 4) ∆*MKL* ≅∆*TVL* | 4) ASA | | |
| Now you!  7) **Given**  **Prove** ∆*QRS* ≅∆*ESR*   |  |  | | --- | --- | | **Statement** | **Reason** | | 1) | 1) | | 2) | 2) | | 3) | 3) | | 4) | 4) | | |

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| 8) In the figure below, which of the following congruencies must be true?  a)  b)  c)  d)  e) | 9) Which of the following is true according to CPCTC? |

**Isosceles Triangles**

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| 10) Fill in the blanks below.  An isosceles triangle has two congruent \_\_\_\_\_\_\_\_\_\_ angles and one \_\_\_\_\_\_\_\_\_\_ angle. It also has two congruent sides called \_\_\_\_\_\_\_\_\_. | 11) Find the value of x. |
| 12) Find the value of x. | 13) In the triangle shown below, what is the value of x?  x 10 cm    40  10 m |
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| Quick example proof! **READ CAREFULLY TO RE-TEACH YOURSELF STEPS.**  **GIVEN:** AB BC  **PROVE:** A C   |  |  | | --- | --- | | **Statement** | **Reason** | | 1) AB BC | 1) Given | | 2) A C | 2) Base Angles Theorem | | |
| Now you!  14)    *HG*  *I J*    *FG*  *FJ*  **GIVEN: ,**    *HF*  *IF*  **PROVE:**   |  |  | | --- | --- | | **Statement** | **Reason** | | 1) | 1) | | 2) | 2) | | 3) | 3) | | 4) | 4) | | |

**Proportions & Similar Triangles**

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| **Example:**  You are painting barn doors. You know that the perimeter of the doors is 64 feet and that the ratio of the length to the width is 3:5. Find the area of the doors.  P = 2L + 2W  64 = 2(3x) + 2(5x)  64 = 6x + 10x  64 = 16x  4 = x  Length: 5(4) = 20 ft Width: 3(4) = 12 ft  Area: (20 ft)(12 ft) = 240 ft2 | Now you!  15) The perimeter of a rectangular table is 21 feet and the ratio of its length to its width is 5:2. Find the area of the table. |
| 16) Find x.    *EF*  *BC*      *DF*  *AC*   | 17) Find WV.  *YZ*  *XY*  *WV*  *XW*    , |
| 18) Triangles FEG and JHK are similar. Find the length of JH. | http://ef004.k12.sd.us/ch6not14.gif19) Check to see if the following two triangles are similar. If so, write a similarity statement. |
| 20) Which of the following triangles are similar? | 21) BE is parallel to CD. Find the measure of BC. |

**Triangle Similarity Theorems**

Theorems SSS, SAS, ASA, AAS, and HL prove that two triangles are **congruent**, but you can also prove that two triangles are **similar** by AA, SSS, and SAS.

Draw an example of each triangle similarity. The first one has been done for you.

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| 22) Two triangles similar by AA.    http://www.icoachmath.com/image_md/AA%20Similarity%20Conjecture1.jpg | 23) Two triangles similar by SSS. | 24) Two triangles similar by SAS. |
| 25) By what similarity theorem are these two triangles similar? | 23) By what similarity theorem are these two triangles similar? | 24) By what similarity theorem are these two triangles similar? |

**45-45-90 Triangles**

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| **25) Fill in the blanks below.** | |
| 26) Find the value of x. Leave your answer in simplest radical form. | 27) Find the value of x and y. |
| 28) Find the value of x. Leave your answer in simplest radical form. | 29) Find the value of a and b. |

**30-60-90 Triangles**

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| **30) Fill in the blanks below.** | |
| 31) Find x and y. | 32) Find x and y. |
| 33) Find x and y. Leave your answer in simplest radical form. | 34) Find u and v. Leave your answer in simplest radical form. |

**SOHCAHTOA**

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| 35) Write out what SOHCAHTOA stands for on the lines below.  S \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  O\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  H\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  C\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  A\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  H\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  T\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  O\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  A\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 36) Find each trigonometric ratio for the given right triangle.  X  sin Z =  17  8  cos Z = \_\_\_\_\_\_  15  Y  Z  tan Z = \_\_\_\_\_\_  sin X = \_\_\_\_\_\_  cos X = \_\_\_\_\_\_  tan X = \_\_\_\_\_\_ |
| 37) An angle in a right triangle has a measure .  If sin=, then tan=?  (Hint: draw a diagram of what you are given first. See if you can figure out the rest of the information about the triangle to find tan.) | 38) In the figure below, ABC is a right triangle with a right angle at C. Which of the statements about this figure is NOT correct?  A   1. cos A =   3  5   1. sin A = 2. tan A =   4  B  C   1. cos B = 2. tan B = |

**Finding Missing Sides Using Trig**

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| **Example:**  You walk from one corner of a basketball court to the opposite corner. Which of the following would solve for the distance x?            **Sin =**  Hyp.  Opp.  **Sin 65 =**  **x Sin 65 = 94**  **x =** | 39) Which of the following would find the height of the lighthouse? |
| 40) To calculate the height *h* of a flagpole, you move 22 feet from the base and record the angle of elevation to the top to be 65°. Find the flagpole's height to the nearest foot. (Use your calculator.) |
| 41) You are at the top of a roller coaster 100 feet above the ground. The angle of depression is 44°. What is the distance x to the nearest foot? | 42) A railroad crossing arm that is 20 feet long is stuck with an angle of elevation of 35° Find the lengths *x* and *y* to the nearest foot. |

**Finding Missing Angles Using Trig**

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| To solve for a degree measure like θ, we will have to use: **inverse** sine/cosine/tangent.  To do this, you must use the **inverse** function on your calculator.  **Practice:**    \_\_\_\_\_\_\_ | 44) Use a calculator to approximate the measure of angle A to the nearest degree. |
| 45) Use a calculator to approximate the measure of angle A to the nearest degree. | 46) You are standing 350 feet away from a skyscraper that is 750 feet tall. What is the angle of elevation from you to the top of the building? |
| 47) Fill in the blanks below with either “inverse” or “regular.”   * When solving for a side length, use \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ trig function. * When solving for an angle, use \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ trig function. | |
| 48) | 49) Find the perimeter of the figure below. |

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| 50) A park wants to put a fence around a baseball field in the shape below. Each straight side of the fence is 120 feet long, and the rounded side is an arc that measures 90. How many feet of fencing does the park need to purchase?  Exact\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Approximate\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 51) The city of Mount Prospect is trying to build a circular field. They want to build a fence around the entire field. How much of fencing is needed if the field if the diameter was 18 meter?  Exact\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Approximate\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 52) The perimeter of a rectangle is 50 inches. The width is unknown. The length is two times longer than the width. Find the area of the rectangle. | 53) The perimeter of a rectangle is 64 feet. The width of the rectangle is half as long as its length. Find the length and width of the rectangle. |
| 54) Find the area of the kite below. | 55) In the kite below, PQ = 5 cm, PS = 5 cm, QS = 6 cm, and TR = 12 cm. What is the area of the kite? |
| 56) A rhombus has diagonals of 20 ft and 34 ft. What is the area of the rhombus? | 57) A rhombus has four equal side lengths of 13 in. The length of the longer diagonal is 24 in. What is the area of the rhombus? |

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| 58) In the parallelogram below, a diagonal is shown and 2 measures 63 and 6 measures 42 What is the m4?    6  5 | 59) In the trapezoid ABCD shown below, side lengths AB and DC are parallel, DAC = 72, D = 90, and B = 109. What is the measure of BCA?  A  B  C  D |
| 60) The parallel sides of the isosceles trapezoid shown below are 12 feet long and 20 feet long, respectively. What is the distance, in feet, between these two sides?  12  5  20 | 61) |

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| 62) Fill in the chart according to the properties of the quadrilaterals:   |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | |  | square | rhombus | parallelogram | rectangle | kite | trapezoid | isosceles trap. | | diagram |  |  |  |  |  |  |  | | # of parallel sides |  |  |  |  |  |  |  | | # of congruent sides |  |  |  |  |  |  |  | | diagonals  ? |  |  |  |  |  |  |  | | diagonals ? |  |  |  |  |  |  |  | |

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| 63) Find the length of arc AB. | 64) Find the length of arc AB. |
| 65) Use the figure below to answer the following questions.     1. is a \_\_\_\_\_\_\_\_. 2. is a \_\_\_\_\_\_\_\_. 3. is a \_\_\_\_\_\_\_\_. | 66) Determine whether the arc is a major arc, minor arc, or semicircle.    a. arc EDC b. arc EB  c. arc BD d. arc AC |
| 67) In the figure, PR and QS are diameters of circle U. Find the measure of the indicated arc. | 68) Find the measure of the arc or central angle indicated. Assume that lines which appear to be diameters are actual diameters. |
| 69) PA and PB are tangent to circle Q. Find z. | 70) Lines r and s are tangent to the circle. Find w. |
| 71) A pizza is sitting in a circular box that fits its edges exactly. The pizza has a diameter that is 12 inches across. The pizza has 8 equal slices cut at equal angles through the center of the pizza. When you take one piece of pizza from the circular pizza box, what is the approximate length of the exposed side of the box? | 72) The minute hand and the hour hands on a clock originate at the center of the clock and reach to the outer edge of the clock. When it is 2:00 pm, what is the length of the arc created by the minute hand and the hour hand? |
| 73) Find the area of the sector. | 74) A child’s bicycle wheel completes exactly three revolutions when it travels 150 cm. The wheel has a decoration on it that covers exactly half of the inner part of the wheel. What is the area of the decoration? Leave your answer in terms of pi. |

Fill in the boxes below with either a formula or a description of how to solve.

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| **Solid** | **Formula: SURFACE AREA** | **Formula: VOLUME** | **Picture** |
| **RECTANGULAR PRISM** |  |  |  |
| **CUBE** |  |  |  |
| **CYLINDER** |  |  |  |

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| 75) Use the diagram at the below to answer the questions at the right. | 1. Give the mathematical name of the solid. 2. What kind of figure is each base? 3. Name the radius of the solid. 4. Name the height of the solid. | |
| 76) Find the surface area and volume of the rectangular prism below.    Surface Area:  Volume: | | 77) Find the surface area and volume of the cylinder below and leave it in terms of .    Surface Area:  Volume: |
| 78) A cube has a volume of 1728 cm3.  a. What is the area of one face of the cube?  b. What is the full surface area of the cube? | | 79) The surface area of one face of a cube is 121 m2. Find the volume of the cube. |